ROUGH DRAFT
R. LADD LIVINGSTON
STATE OF IDAHO

5200

Biological Evaluation of Douglas-fir Tussock Moth Outbreaks in Northern Idaho - 1973

Introduction

The last outbreaks of Douglas-fir tussock moth, Orgyia pseudotsugata McD., subsided in 1965 in the Northern Region. They were controlled by natural factors such as polyhedrosis virus, and parasites. In addition, about 120,000 acres in northern Idaho were sprayed with three-quarters of a pound of DDT in diesel oil at the rate of 1 gallon per acre (Tunnock, 1965).

Forested areas were not infested again until 1972 when about 300 acres of Douglas-fir were defoliated south of Kettle Falls, Washington. Egg masses were also found in a 100-acre logging area near Charles Butte, St. Joe National Forest, Idaho (Tunnock, et. al., 1973).

The presence of the tussock moth in 1972 was a warning that an epidemic was building up. By 1973, 99,000 acres contained defoliation visible from the air in northern Idaho. (Tunnock, et. al., 1973).

During the fall of 1973, a biological evaluation based on current egg masses was made in the above infestations. The objectives of this survey were to: (1) classify areas needing control, (2) determine total infested area, (3) predict potential defoliation for 1974, and (4) collect new egg masses for virus incidence and population predictions.

Methods

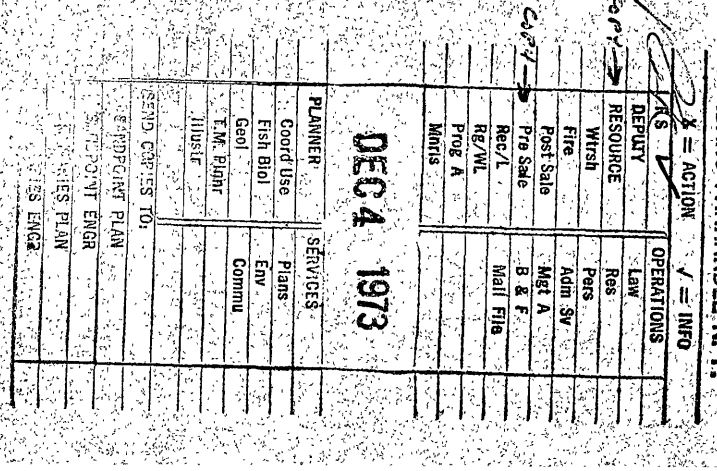
Egg mass surveys were made within and around each defoliated area. A section was chosen as the sampling unit and one plot was established in each section.

In each plot, 8 trees were sampled. Four branches from the midcrown of each sample tree were removed. The extreme length and width of the foliar area were recorded. The number of new and old egg masses and the presence or absence of cocoons on each branch were also recorded. Five new egg masses were collected from each plot for virus determination. The survey data was utilized to compute the number of new and old egg masses per thousand square inches of foliage, the ratio of old to new egg masses and the abundance of cocoons for each plot. The resultant data was analyzed to determine the areas with populations warranting a control effort.

Results

Table 1

Unit	Acres Control	Potential	Activity Total
Nezperce			
Salmon	12,300	7,660	36,350
Selway	20,800	9,120	76,960
Clearwater	5,880	1,200	82,240
St. Joe	57,792	37,248	206,963
Coeur d'Alene	31,866	14,355	51,258
Craigmont	4,614	6,579	19,449
TOTALS	133,252	76,162	473,220



Craigmont Unit

This infestation lies in the area between the Salmon and Clearwater Rivers. The known population is in an irregular band surrounding the Soldiers Meadows Reservoir area, southwest of Winchester and southeast of Lewiston.

Aerial surveys during 1973 showed 4,000 acres with visable defoliation. Subsequent egg mass surveys and ground reconnaissance have shown tussock moth activity in a total 19,449 acres. Of this total 4,614 acres have populations that warrant control with an additional 6,579 acres that may need treatment pending further investigation.

Immediately to the south of this unit there is an extensive infestation of the spruce budworm. The defoliation caused by the budworm may be covering up additional Douglas-fir tussock moth populations similar to that in the Nezperce Unit.

This is the first time that the Douglas-fir tussock moth has been found in this area.

Coeur d'Alene Unit

Coeur d'Alene Unit consists of an area limited on the south and east by the Coeur d'Alene River, by Coeur d'Alene Lake on the west, and extending north across Interstate 90 into the headwaters of the Skitwish, Marie, Stoney, and Curran Creek drainages.

An isolated population sits due east of Dalton Garden, Idaho on the ridge containing East and West Canfield Buttes.

Aerial detection surveys during 1973 found 1880 acres with visible defoliation due to the tussock moth. Fall egg mass surveys indicated activity on a total of 51,258 acres. Of this, 31,866 acres have a population that warrants control, with an additional 14,355 acres of potential control area pending further investigation.

This area did not show any defoliation in 1972 and appears to contain a building population. There is a distinct possibility that this unit could increase in size during 1974 as survey crews found tussock moth cocoons in most plots on the northern edge of the area. The infestation may extend farther north than could be sampled at this time.

Clearwater Unit

Only 120 acres were defoliated in this unit which is in Clearwater County between the North Fork of the Clearwater River and Middle Fork to the south.

Egg mass counts classified 5,880 acres as high risk for defoliation in 1974 and control is recommended. There is potential for defoliation of an additional 1,200 acres which may also need treatment in 1974. There was some evidence of tussock moth populations in 82,240 acres within this unit.

Nezperce National Forest Unit

This unit lies in Idaho County between the Middle Fork of the Clearwater River to the north and the Salmon River to the south. Defoliation occurring in 1973 was visible from the air on 23,000 acres mainly on the Selway and Salmon River Ranger Districts. Damage was heaviest on the Salmon District and some tree killing occurred in pure stands of Douglas-fir from 10-50 acres in size.

On the Salmon District, egg mass counts classified 12,300 acres as high risk and control is recommended for these areas. In addition, further sampling may indicate another 7,660 acres will need treatment. Altogether, there was tussock moth activity within 36,350 acres on this district.

On the Selway District, 20,800 acres need treatment with an additional 9,120 acres of potential control area. Tussock moth activity was found on a total of 76,960 acres.

St. Joe Unit

This area is the largest unit within the current Idaho infestation. It is roughly bordered on the north by the St. Joe River, on the west by the Idaho-Washington border, on the south by Idaho Highway No. 81, leading from Moscow to Elk River and extending to the east as far as Range 3 East, Boise Meridian.

Aerial detection surveys conducted in 1973 showed a total of 70,000 acres with varying degrees of defoliation. No defoliation was observed in 1972. Subsequent monitering has shown the Douglas-fir tussock moth to be active on approximately 206,963 acres. Fall egg mass surveys have shown that there is a high risk for damage on 57,792 acres with populations being high enough to recommend control. In addition there are 37,248 acres with populations that may warrant control pending further investigation.

The Douglas-fir tussock moth population in this unit is in numerous widely scattered epicenters. The largest population centers are in a chain between Plummer and Moscow. These contain the majority of the areas where control is recommended. This is the same basic area where outbreaks of the tussock moth developed in 1945 and 1964.

All factors indicate that the population in this area is still increasing.